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EXAMINER				
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ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

Office Action Summary

Application No.

10/568,532

Applicant(s)

STEUER ET AL.

Examiner

AMJAD ABRAHAM

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-45 is/are pending in the application.
- 4a) Of the above claim(s) 24, 32 and 34-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-23, 25-31, 33, and 38-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Applicant's remarks and amendments, filed on June 2, 2009, have been carefully considered. Claims 2, 3, 32, and 37 have been withdrawn. Claims 4-23, 25-31, and 33-36 have been amended. New claims 38-45 has been added.

Election/Restrictions

1. Applicant has amended product claims 25-31 and 33, thus converting said product into method claims. Therefore the restriction as it relates to those claims are withdrawn in light of applicant's amendment.
2. Newly amended claims 34-36 as well as claim 24 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The method of using the granulates produced require additional processing steps not needed in the production of the granulate. As the method of producing the granulate is disclosed by Hofmann (WIPO Publication WO 02/12356 A2—see rejection below), and process of using the produced granulate would lack unity of invention because the common technical feature (the production of granulate) is taught by Hofmann.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 24 and 34-36 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Specification

3. The examiner withdraws the objection to the specification due to applicant's amendment fixing the misspelled word.

Claim Objections

4. The examiner withdraws the objection to claim 4 as applicant has amended said claim language.

Claim Rejections - 35 USC § 112

5. The examiner withdraws claim rejection based on 35 USC 112 2nd paragraph due to applicant's amendments.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 1, 13, 22, 27, and 39 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hofmann (WIPO Publication WO 02/12356 A2).

8. Regarding claim 1, Hoffman teaches a process for producing a pellets of a Polyvinyl Butyral containing composition. **(See abstract)**. Examiner would like to point out that Polyvinyl Butyral is a specific type of a polyvinyl acetal.

- a. Hoffman goes on to teach the method comprising:
 - i. Providing a polyvinyl acetal (PVB—Polyvinyl Butyral) containing composition. **(See page 5 line 1 to page 6 line 14)**.
 - ii. Extruding said composition using a twin-screw extruder. **(See page 6 line 6)**.
 - iii. At a temperature from 100C to 260 C. **(See page 5 lines 12-13)**.
 - iv. To provide a melt (molten state). **(See page 5 lines 1-5)**.
 - v. And pelletizing (granulating) the melt to form desired product. **(See page 5 line 5)**.

(1) Applicant has defined granulating to include pelletizers.

(See page 7 lines 15-25 of applicant's specification).

9. Regarding claim 13, Hofmann teaches wherein the temperature is changed as the fed material is changed into the molten state. **(See page 5 line 1 to page 6 line 14)**.
10. Regarding claims 22 and 27, Hofmann teaches wherein the PVB can be mixed at a ratio from 1:100 to 100:1 with a second component. **(See page 5 line 6)**.
11. Regarding claim 39, Hofmann teaches wherein the extruding temperature is between 100C to 260C. **(See page 5 lines 12-13)**.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 4 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Schwind et al. (US Pre-grant Publication 2002/0017735 A1).

15. Regarding claims 4 and 38, Hofmann does not teach wherein the pelletization/granulation is carried out by either hot or cold pelletization techniques.

b. However, Schwind teaches that when extruding a polymer based material to form a melt, granulation/pelletization is usually utilized to further process the extrudate material. **(See paragraph 0131).**

c. As hot/cold pelletization is well known in the art of granulation, it would have been obvious to one having the ordinary skill in the art to use such process

to further process the extrudate to a pelletized material. This end product (pellets) are typically used in further processing for making films and the like.

16. Claims 5, 25-26, and 40-45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) as applied to claim 1, in view of Lerman et al. (USP No. 3,472,801).

17. Regarding claim 5, Hoffman does not expressly teach wherein a foaming agent is added to the composition.

d. However, Lerman teaches that in processing polymeric materials (such as Polyvinyl acetal), it is known to add foaming material in order to form spherical particles. **(See abstract, column 4 line 5, and column 6 lines 5-25).**

e. The use of foam is well known when making a porous or light weight material. It is well known in the art that polymer compositions may be converted to foam products using physical and/or chemical blowing agents. Therefore, it would have been obvious to one having the ordinary skill in the art to use a foaming agent of blowing agent to make a material to be used in making foamed products.

18. Regarding claims 25-26 and 40-45, the combination of Hofmann and Lerman do not expressly disclose the various bulk densities and particle size distribution claimed.

f. However, Lerman specifically discloses the fact that density desired particle size are wholly dependant on the types of polymers used, additives incorporated, as well as operating conditions. **(See column 6 lines 35-43).**

Lerman goes on to teach that the average particle size can be controlled by varying the composition of the polymers, dispersing agents, and other additives.

(See column 6 line 72 to column 7 line 4). Furthermore, it is taught that the control of size, density, and color of the final particles will be altered depending on the use needed for the resultant product. (See column 7 lines 12-25).

g. Therefore, it would have been obvious to one having the ordinary skill in the art at the time of the invention was made to produce said particle sizes and densities based on the end use for the product, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious engineering design choice. *In re Leshin*, 125 USPQ 416.

19. Claims 6-7, 23, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Applicant's admitted prior art (hereinafter, "APA"—see applicant's specification).

20. Regarding claim 6, Hoffman teaches wherein the PVB is transferred to the extruder via a single stream. (See page 11 line9).

h. However, Hofmann does not expressly state that the single stream is a side stream inlet.

i. However, APA discloses that it is well known in the art to use a side stream inlet into an extruder to apply additive materials which would qualify as a

part of the polyvinyl acetal containing composition. **(See page 10 lines 24-29 of applicant's specification).**

j. Therefore, it would have been obvious to add additional composition components using side streams for the benefit of controlling mixing conditions in various screw metering, mixing, or plasticizing sections.

21. Regarding claim 7, Hoffman teaches wherein the PVB is transferred to the extruder via a single stream. **(See page 11 line9).**

22. Regarding claim 23 and 29, Hofmann does not teach wherein the composition for manufacture of granulates, which contains the polyvinylacetal, contains at the most 2 wt % external softener. At most 2% includes zero.

e. However, APA teaches that the uses of external softeners (additives) are known to those having the ordinary skill in the art. **(See page 46 lines 8-15), and optimizing the amount depending on final use of the product would be obvious to one of ordinary skill in the art).**

23. Claims 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Applicant's admitted prior art (hereinafter, "APA"—see applicant's specification) in further view of Kiyono et al. (USP No. 3,679,788).

24. Regarding claims 8 and 12, the combination of Hofmann and APA, does not expressly teach wherein the side stream inlet is cooled and wherein the cooling

temperature is less than or equal to the glass transition temperature of the polyvinyl acetal containing composition. .

k. However, the side stream inlet would typically be at ambient conditions, these ambient conditions would ensure that the inlet material is below the melt temperature of glass transition temperature of the polymer being fed. This is an important consideration since feed line plugging or unwanted melting is an issue in extrusion processes.

l. Furthermore, Kiyono teaches that cooling may be used to prevent unwanted melting in certain areas of an extruder. (See column 4 lines 39-51 and claim 8).

m. As it is well known in the art to prevent unwanted melting by cooling the section to below melt or flow temperatures like the glass transition temperature, it would have been obvious to ensure that the PVB pellets of Hofmann would remain in solid form until inside the extruder.

25. Claims 9-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Kiyono et al. (USP No. 3,679,788).

26. Regarding claims 9-11 and 14, Hoffman does not teach: (1) wherein the region of the extruder from the main inlet up to a length of the screw (15 L/D) is cooled; (2)

wherein at least one of the extruder screws are cooled; and (3) wherein the region of the extruder from the main inlet up to a length of the screw (10 L/D) is cooled.

n. However, Kiyono teaches wherein to control unwanted melt, cooling the screws and/or cylinder may be instituted to ensure the resin is in an un-molten state. (See column 4 lines 39-51 and claim 8).

o. It would have been obvious to one having the ordinary skill in the art to control regions of the extruder which are to be kept in an un-melted state to ensure that the extruder is not plugged.

27. Regarding claim 14, Hofmann teaches wherein the temperature is changed as the fed material is changed into the molten state. (See page 5 line 1 to page 6 line 14).

28. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Rosato (Extruding Plastics – A Practical Processing Handbook, Springer-Verlag (1998)—already made of record).

29. Regarding claim 15, Hofmann does not teach that gaseous compounds, which arise upon conversion of the polyvinylacetal-containing composition into the molten state, are removed from the composition.

g. However, Rosato teaches that extruder venting is well known in the art of extrusion technology because it is well known in the art that gaseous components are freed during the extrusion process. (See page 221 and figure 4.10).

34. Regarding claim 16, the combination of Hofmann and Rosato does not explicitly teach wherein part of the gaseous compounds is removed through the main entry port of the extruder. **However, one having the ordinary skill in the art would realize that gas will escape back through the entry port (feed port) if the feed port is vented and no feed material is present.**

30. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Applicant's admitted prior art (hereinafter, "APA"—see applicant's specification) and in further view of Nachtergaele et al. (USP No. 5,032,337).

31. Regarding claims 17-20, Hofman and APA does not explicitly teach: (1) that the side stream input takes place by means of a dosing device with one or two screw-conveyors, (2) that the extruder screws diameter is larger than the screw diameter of the side stream dosing, (3) that the ratio of the screw diameter of the extruder to the screw diameter of the side stream dosing lies in the range from 1.1:1 to 10:1, and (4) that the temperature in the region of the side stream dosing is less than or equal to the glass transition temperature of the composition which contains at least one polyvinylacetal.

h. However, Nachtergaele discloses the use a dosing screw unit which delivers material to the extrusion screws. **(See column 3 lines 24-34).**

i. It would have been obvious to one having the ordinary skill in the art to use a dosing screw as the side stream inlet to the extrusion screw to control the

amount of feed materials are present to ensure a proper blending of ingredients and thus a uniform end product. The extruder screw diameter is typically larger in order to accommodate the dosing stream inlet plus additional additives that are added to the extruder blend. As the extruder handles a higher quantity of material the extruder screw would obviously have to be bigger in order to have a uniform flow rate. Furthermore the determination of the ratio of screw diameter of the dosing stream and extruder is a matter of conventional design that would be routine among feed inlet and side inlet design when creating an extrusion system. Also it is important in feed/sidestream inlet design to keep the dosing stream cooled to that no polymerization will occur in the line that will plug the dosing stream. It would have been obvious to one having the ordinary skill in the art to do this to minimize extruder shut down due to plugging of the dosing lines.

32. Claims 21 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. (WIPO Publication WO 02/12356 A2) in view of Miyake (US Pre-grant Publication 2003/0109636 A1).

33. Regarding claims 21 and 29, Hofmann does not teach that the composition for manufacture of granulate which contains the polyvinylacetal, has a glass transition temperature greater than or equal to 0.degree. C.

j. However, Miyake teaches that the typical glass transition temperature for a polyvinylacetal resin is between 55 to 110 C. (See paragraph [0050])

disclosing that heat deformation may occur if polyvinylacetal with a glass transition temperature less than 55 C is used.)

k. The use of a polyvinylacetal resin with a glass transition temperature which is greater than 0 C is known in the art. Polyvinylacetal resin is typically used in the production of films or sheets and it is important that the film or sheet is not soft or heat deformable at room temperature. Thus, it would have been obvious to one having the ordinary skill in the art to use a polyvinylacetal with a glass transition temperature greater than 0 C.

34. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. (WIPO Publication WO 02/12356 A2).

35. Regarding claim 28, Hofmann does not expressly teach wherein the polyvinylacetal is obtainable through a reaction of a least polymer A with compound B.

p. However, the use of the claim limitation "obtainable" renders this claim limitation as one of many formulations that would qualify as a polyvinyl acetal containing material. As Hofmann discloses, PVB which is a specific example of a polyvinyl acetal containing composition, it would have been obvious to one having the ordinary skill in the art to use many combinations of materials to create a material suitable for the intended end use of the product.

36. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. (WIPO Publication WO 02/12356 A2) in view of Kroggel et al. (USP No. 5,559,175).

37. Regarding claims 30-31, Hofmann does not expressly teach wherein the PVAL containing granulate contains fiber strengthening materials such as glass fibers, aramid fibers, and or carbon fibers.

q. However, Kroggel teaches that it is known in the art to add fibers in making polyvinyl acetal dispersions. (See column 8 lines44-65).

r. Furthermore, it is well known in the art to use glass or carbon fibers as filler or strengthening material. Therefore, it would have been obvious to one having the ordinary skill in the art to utilize fiber strengthening material in order to make a material which can be used to make products with increased strength and rigidity.

Response to Arguments

38. Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is (571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AAA

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791